In the Claims

Claims 1-38 (Canceled).

39. (New) A holding device for an optical element in an objective, having a mount that is connected, on the one hand, to the objective and, on the other hand, at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element.

40. (New) The holding device as claimed in claim 39, wherein a seal or gasket is arranged between the optical element and the reinforcing element.

41. (New) The holding device as claimed in claim 39, wherein the reinforcing element and the optical element are composed of the same material.

42. (New) The holding device as claimed in claim 40, wherein the reinforcing element and the optical element are composed of the same material.

43. (New) The holding device as claimed in claim 41, wherein the reinforcing element and the optical element consist of SiO_2.

44. (New) The holding device as claimed in claim 41, wherein the reinforcing element and the optical element consist of CaF_2.

45. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

46. (New) The holding device as claimed in claim 40, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

47. (New) The holding device as claimed in claim 41, wherein the optical element and the reinforcing element are connected to one another by a wrung connection.

48. (New) The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have substantially flat surfaces in the region of the wrung connection.

49. (New) The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have spherical surfaces in the region of the wrung connection.

50. (New) The holding device as claimed in claim 45, wherein the optical element and the reinforcing element in each case have aspheric surfaces in the region of the wrung connection.

51. (New) The holding device as claimed in claim 45, wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection.

52. (New) The holding device as claimed in claim 45, wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the wrung connection and wherein a seal or gasket is arranged between the optical element and the reinforcing element.

53. (New) The holding device as claimed in claim 51, wherein the protective layer is formed by sol-gel materials.

54. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by bonding.

55. (New) The holding device as claimed in claim 40, wherein the optical element and the reinforcing element are connected to one another by bonding.

56. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by bonding and wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the bonding connection.

57. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by soldering.

58. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are connected to one another by soldering and wherein the optical element and/or the reinforcing element are provided with a protective layer in the region of the soldering connection.

59. (New) The holding device as claimed in claim 39, wherein the optical element and the reinforcing element are designed in one piece with one another.

60. (New) The holding device as claimed in claim 39, wherein a seal or gasket is arranged between the mount and the reinforcing element.

61. (New) The holding device as claimed in claim 40, wherein a seal or gasket is arranged between the mount and the reinforcing element.

62. (New) The holding device as claimed in claim 60, wherein the seal or gasket is arranged in such a way that contact between the same and an immersion medium is avoided.

63. (New) The holding device as claimed in claim 39, wherein the reinforcing element is held inside the mount by an isostatic bearing.

64. (New) The holding device as claimed in claim 63, wherein the isostatic bearing has a plurality of, preferably three, elastic support points between the reinforcing element and the mount.

65. (New) The holding device as claimed in claim 39, wherein the reinforcing element is fitted on the mount by a plurality of fastening elements.

66. (New) The holding device as claimed in claim 60, wherein the reinforcing element is fitted on the mount by a plurality of fastening elements.

67. (New) The holding device as claimed in claim 65, wherein the fastening elements act on the neutral fiber of the reinforcing element.

68. (New) The holding device as claimed in claim 39, wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

69. (New) The holding device as claimed in claim 60, wherein at least one elastic decoupling element is arranged between the mount and the reinforcing element.

70. (New) The holding device as claimed in claim 68, wherein the elastic decoupling element has a plurality of coupling members that rest on a spherical surface of the reinforcing element.

71. (New) The holding device as claimed in claim 39, wherein the optical element is designed as a terminating element.

72. (New) The holding device as claimed in claim 40, wherein the optical element is designed as a terminating element.

73. (New) An objective having an optical element and having a holding device for the optical element having a mount that is connected, on the one hand, to the objective and, on the other hand, at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element.

74. (New) The objective as claimed in claim 73, which is designed as a lithography objective.

75. (New) The objective as claimed in claim 74, said objective being an immersion lithography objective.

76. (New) The objective as claimed in claim 75, wherein provided between the optical element and an optical element arranged inside the lithography objective are a feed line for gas or immersion medium, and a removal line for gas or immersion medium.

77. (New) The objective as claimed in claim 75, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

78. (New) The objective as claimed in claim 76, wherein provided between the optical element and an immersion medium are a gas feed line and a gas extraction line to and from an immersion medium space.

79. (New) The objective as claimed in claim 73, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

80. (New) The objective as claimed in claim 74, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

81. (New) The objective as claimed in claim 75, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

82. (New) The objective as claimed in claim 76, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

83. (New) The objective as claimed in claim 77, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

84. (New) The objective as claimed in claim 75, wherein a measuring system for determining the tilt and/or the decentering and/or the axial position of the optical element is connected to the manipulation device.

85. (New) The objective as claimed in claim 84, wherein a control loop for controlling the tilt and/or the decentering and/or the axial position of the optical element is provided which has the manipulation device, the measuring system and a control device.

86. (New) A lithographic apparatus comprising an illumination system for providing a projection beam of radiation, a support structure for supporting patterning means, a substrate table for holding a substrate, and a projection system for projecting the patterned beam onto a target portion of the substrate, the projection system comprising an objective having an optical element and having a holding device for the optical element having a mount that is connected, on the one hand, to the objective and, on the other hand, at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element.

87. (New) A method for connecting an optical element and a reinforcing element in an objective, in which the optical element and the reinforcing element are connected to one another by means of wringing.

88. (New) The method as claimed in claim 87, wherein respective contact surfaces of the optical element and of the reinforcing element are treated with a chemically activating liquid before the wringing and are exposed to a temperature of more than 150° after the wringing.

89. (New) The method as claimed in claim 88, wherein an acid is used as chemically activating liquid.

90. (New) The method as claimed in claim 87, wherein a protective layer is provided in the region of the wrung connection at the optical element and/or at the reinforcing element.

91. (New) The method as claimed in claim 90, wherein the protective layer is applied by a sol-gel method.

92. (New) Method of manufacturing semiconductor components by using a lithography objective according to claim 86.

93. (New) An immersion lithography objective, wherein provided between an optical element subjected to a first immersion medium and an optical element arranged inside the lithography objective are a feed line for a second immersion medium, and a removal line for the second immersion medium.

94. (New) The immersion lithography objective as claimed in claim 93, and having a holding device for the optical element having a mount that is connected, on the one hand, to the objective and, on the other hand, at least indirectly to the optical element, there being arranged between the mount and the optical element a reinforcing element.

95. (New) The immersion lithography objective as claimed in claim 94, wherein the coefficient of thermal expansion of the reinforcing element corresponds substantially to the coefficient of thermal expansion of the optical element.

96. (New) The immersion lithography objective as claimed in claim 93, wherein between the optical element and the first immersion medium are provided a gas feed line and a gas extraction line to and from an immersion medium space.

97. (New) The immersion lithography objective as claimed in claim 93, wherein a manipulation device is provided by means of which the optical element can be displaced along an optical axis and/or in a plane perpendicular to the optical axis, and/or can be tilted about an axis perpendicular to the optical axis.

98. (New) The immersion lithography objective as claimed in claim 97, wherein a measuring system for determining the tilt and/ or the decentering and/or the axial position of the optical element is connected to the manipulation device.

99. (New) The immersion lithography objective as claimed in claim 98, wherein a control loop for controlling the tilt and/or the decentering and/or the axial position of the optical element is provided which has the manipulation device, the measuring system and a control device.